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Raceway for electric cables - has series of gutter shaped elements and can be extended, assembled and mounted without any tools

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The raceway for electric cables, ducts and the like can be mounted, extended and assembled in a very simple manner without the need for tools. Furthermore, there is no need to observe accurate sizes which is an important factor in mounting raceways in buildings which are still in the rough state. The raceway comprises a series of gutter shaped elements (1) which are connected to one another at the junction (2). The base of the raceway has a pair of longitudinal rectangular ribs (7) at a distance (a) from the side walls (5). The upper edge of the sidewalls has a rolled-over rim (6).

Where two sections are to be joined, then on each side an L shaped plate (9) first has its rolled-over rim interlocked with that of the sidewall. The plate is then pivoted over so that its returned and formed lower flange (11) then interlocks in the channel-like recess (a). The joining plate may also have an extension providing a mounting facility. (16pp Dwg.No.1 + 2/12)

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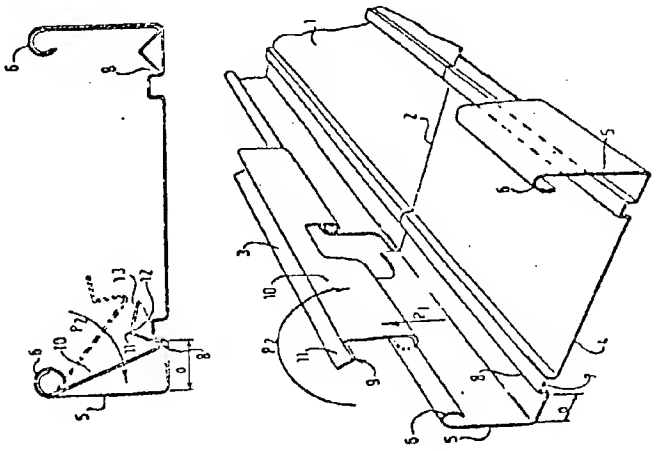

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(54) Raceway.

(57) A raceway for cables, ducts or the like to be composed of elements (1) having at least one bottom surface (4) and sidewalls (5) standing thereon on both sides and being provided each with integral fastening means (6, 34) wherein said bottom surface (4) is provided with at least one stop member (8) located at a given distance from the sidewall, whilst an L-shaped auxiliary member (3) fits between said stop (8) and the fastening means (6, 34) of the sidewall (5) in order to interconnect said raceway elements (1), or to fasten other elements such as consoles, terminal pieces and the like to said raceway elements without additional fastening means such as bolts.

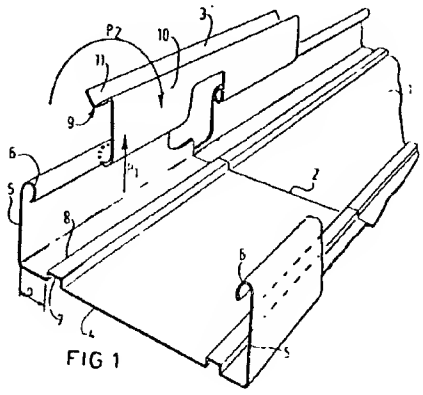

FIG 1

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Raceway

The invention relates to a raceway for cables, ducts or the like can be composed of elements having at least one bottom surface and sidewalls standing thereon on both sides and being provided each with integral fastening means.

The invention has for its object to improve a raceway of the kind set forth in the preamble to an extent such that mounting, extension and assembling the elements can be carried out in a simple manner without the need for tools on the of mounting, whilst there is no need for observing accurate size, which is particularly important in mounting raceways in buildings in the rough state.

The raceway embodying the invention is distinguished in that the bottom surface is provided with at least one stop member located at a given distance from the sidewall, whilst an auxiliary element fits between said stop and the fastening means of the sidewall.

Thanks to said auxiliary element the raceway elements can be interconnected or other elements such as consoles, terminal pieces and the like can be fastened to the raceway elements without additional fastening means such as bolts,

pins or tags.

A particularly light-weight, but rugged construction is ensured because the auxiliary element is formed by an L-shaped plate.

In a further embodiment of a raceway element having an inwardly bent-over upper rim of the sidewall one limb of the L-shaped auxiliary element is bent in the same way as the upper rim of the sidewall so that at the welds between neighbouring raceway elements the upper rim is continued in substantially the same form, which is conducive to the strength of the raceway because the bent-over upper rim is frequently an essential factor in the rigidity of the raceway. Moreover, the resistance to a shift of the raceway elements away from one another is enhanced as well as the electric conductibility owing to the reduction of the electric transition resistance.

In order to obtain a particularly rigid structure both in a vertical and a horizontal sense in accordance with the invention the upper rim as well as the limb of the auxiliary element have a cross-sectional shape in the form of a circle sector of more than 180^{o}. Moreover, the relatively sharp terminal edge of the sheet material is thus bent inwardly to an extent such that the risk of incisions of the protective sheaths of, for example, electric leads to be arranged in the limb is avoided.

In the case of an upper rim of the sidewall of the raceway element inwardly bent-over at an acute angle to the edge of one limb of the L-shaped auxiliary element is provided with a tag bent out of its plane and penetrating into the acute-angel rim, wherein it is clamped.

In certain embodiments it may be preferred to provide one limb of the L-shaped auxiliary element with one or more stiffening ribs parallel to the other limb. This also contributes to an improved transfer of forces via the sidewall of the raceway.

In order to improve the fixation of the auxiliary element behind the stop member the other limb of the auxiliary element is kinked. Dismounting of the auxiliary element can, moreover, be more easily carried out because

a space is left below the other limb and the bottom surface, into which a tool, for example, a screw driver, can be inserted.

The stop member is preferably constructed in the form of a continuous ridge bent out of the bottom surface. Other continuous deformations may be used as well. A continuous form permits of disposing the auxiliary element at an arbitrary area so that accuracy to size need no longer be observed.

The invention will be described more fully with reference to the drawing of a few embodiments.

Fig. 1 is a perspective plan view of part of a raceway, said part being the welding junction between two raceway elements.

Fig. 2 is a cross-sectional view of the raceway of Fig. 1.

Fig. 3 and 4 a perspective plan view of part of a raceway element having differently constructed stop members.

Figs. 5 and 6 a perspective view of part of a raceway having an auxiliary element of an alternative construction.

Figs. 7 and 8 a perspective plan view of a raceway provided with an auxiliary element for fastening welding boxes or, respectively raceway to a wall.

Fig. 9 is a view corresponding with that of Fig. 8 of a raceway having a different mode of fastening.

Fig. 10 shows an auxiliary element as a fastening means in a different embodiment.

Fig. 11 is a perspective view of a raceway element having an upper rim inwardly bent over at an acute angle.

Fig. 12 is a perspective view of a raceway element having continuous holes for fastening in the sidewall receiving a further form of the auxiliary element.

Fig. 1 shows that the raceway comprises a plurality of guttershaped elements 1 which have to be connected with one another at the weld 2, that is to say, the junction of the head edges.

To this end the invention provides an auxiliary element 3, which will be discussed in detail hereinafter.

Each gutter-shaped element 1 comprises a bottom surface 4 and two standing sidewalls 5 adjoining the side edges thereof and having each an inwardly bent over peripheral strip 6 at the free upper edge.

The bottom surface 4 has a ridge 7 bent upwardly out of said surface and extending parallel to the sidewalls 5 at a distance a therefrom.

The ridge 7 constitutes by the upright peripheral strip 8 facing the sidewall 5 a stop spaced apart by the distance a from said sidewall 5.

The auxiliary element according to the invention has the form of a substantially L-shaped plate 9 (see Fig. 2), the long limb 10 of which extends up to the sidewall 5 and the upper rim of which is bent in the same manner as the upper rim 6 of the sidewall. In this construction the short limb 11 is slightly kinked at 12 so that the free end edge 13 will be located approximately at a distance a from the long limb 10 of the L-shaped element 9.

Mounting of the auxiliary element 9 can be carried out in a particularly simple manner by first disposing the gutter-shaped elements 1 in contact with one another at their head edges 2 and arranging the flanged rim of the long limb 10 in the direction of the arrow P1 in the flanged rim of the sidewall 5 as is illustrated in Fig. 1. Subsequently the element can be turned in the direction of the arrow P2 until the position shown in the left-hand part of Fig. 2 is attained. The corner of the L gets behind the upper rim of the side 8 of the ridge 7, after which the element 9 can be further turned in the direction of the arrow P2 until the position shown in the right-hand part of Fig. 2 is attained. It is apparent that the L-shaped auxiliary element is retained with close fit behind the stop formed by the side 8 and in the bent-over rim 6. The length of the element 9 is not defined provided it is sufficient to transfer the load from one gutter-shaped element 1 to the neighbouring one.

Disengagement of the L-shaped element can be performed in a simple manner by placing a screw driver or the like below the kink 11 of the short limb and lifting up said limb.

In a first instance the corner of the L remains behind the side 8 so that even in the event of unexpected, abrupt disengagement additional safety is guaranteed.

Figs. 3 and 4 shows alternative forms, in particular, of the stops on or in the bottom surface 4 of the gutter-shaped elements. Referring to Fig. 3 the stop is formed by a sequence of short embossed parts 14 on the side 15 facing the sidewall 5 where the other limb of the auxiliary element will be located.

Fig. 4 shows large elongate holes 16, the edge 17 remote from the sidewall 5 forming the stop member. The short limb of the auxiliary element 9 has embossed parts 18 having a corresponding pitch but a smaller width, these parts 18 exerting pressure on the edge of the holes 16 when the element 9 is inserted. A rib 19 in the long limb may operate as a hinge by which inaccuracies of the size of the rim 6 can be compensated.

Figs. 5 and 6 show alternative forms of the auxiliary element 9.

Referring to Fig. 5 the auxiliary element is adapted to a rectangular, inwardly bent-over upper rim 20 of the sidewall 5 so that the long limb of the element 9 need only have a flange 21 bent over at right angles. The short limb is clamped tight behind burl-shaped stop members 29 on the bottom plate 4 of the gutter-shaped element.

Fig. 6 shows an auxiliary element 9, the long limb of which is provided with a stiffening rib 22 extending parallel to the upper rim.

The angle between the short and the long limb differs in this case from 90°.

Fig. 7 shows an auxiliary element having, like the preceding embodiments, an L-shaped part, the short limb 11 of which co-operated with a sequence of bulging parts 30 pressed out of the bottom plate 4 of the element and the long limb of which gets at the sidewall 5. The long limb 10 is passed below and along the upper rim of the raceway element and goes over in a mounting plate 31 for arranging welding boxes and the like. Since there is no need for passing bending

load from one element to the other, it is sufficient to clamp the auxiliary element between the head edge of the flange 6 and the bottom surface 4. As a matter of course, the L-shaped part and the stops in the limb may be constructed in any suitable form.

Fig. 8 shows an auxiliary element 9 which can be arranged in the raceway in the same manner as the elements described above, that is to say, in or below the bent-over upper rim of the gutter-shaped element. Previously, however, is fastened a console 23 by means of rivets 24 or the like, which has the advantage that the place of the element 9 or the console 23 respectively can be accurately determined with respect to bores drilled in the wall for the fastening bolts 25 by shifting the element 9 in the direction of length of the raceway. Nevertheless, the construction embodying the invention guarantees firm fastening.

Fig. 9 shows a variant of the fastening mode of the console, in which the console is fastened by two auxiliary elements 9 arranged side by side, the long limb 10 of which is inwardly bent over through a given distance. Below the limb 10 and between the outer wall 5 of the raceway can be clamped a flange 27 of the console 26.

Fi.g 10 shows an embodiment in which the two auxiliary elements of Fig. 9 are, in fact, combined to form a single unit and in which the inwardly bent-over part of the long limb 10 of the element 9 has a recess 28 for previously receiving a console 26 before they are together arranged in the raceway.

The raceway element of Fig. 11 has an upper rim 6' which adjoins the sidewall 5 at an acute angle. The auxiliary element having in this case the form of a plate of L-shaped cross-section has at the upper edge one or more tags 30 bent out of the plane and being firmly clamped with the remaining upper edge in the acute corners so that a high resistance against displacement in the direction of length is ensured.

The other limb of the auxiliary element is locally removed to form clamping tags 31 having the same function as

the continuous limb 11 of the embodiments described above.

Fig. 12 shows an auxiliary element formed by an L-shaped strip 32, one limb of which terminates in a tag 33, which can be passed through one of a sequence of holes 34. With the holes 34 registers a hole 35 of an end piece 36 of the raceway so that the tag 33 grips around the outer side of the sidewall of the end piece 36 in order to establish a clamping joint. Such a clamping joint may, of course, also be used in other raceway elements than an end piece.

The invention is not limited to the embodiments described above.

WHAT IS CLAIMED IS:

1. A raceway to be composed of elements for cables, ducts or the like, the raceway elements having at least one bottom surface and upright sidewalls adjoining said surface on both sides and having each integral fastening means characterized in that the bottom surface is provided with at least one stop member located at a given distance from a sidewall and in that an auxiliary element can be fitted between said stop member and the fastening means.

2. A raceway as claimed in claim 1 characterized in that the auxiliary element is formed by an L-shaped plate.

3. A raceway as claimed in claim 1 or 2 in which each sidewall has an inwardly bent over peripheral strip on the top side characterized in that the auxiliary element fits between said peripheral strip and the stop in the bottom surface.

4. A raceway as claimed in claim 3 characterized in that one limb of the L-shaped auxiliary element is bent in the same manner as the upper rim of the sidewall.

5. A raceway as claimed in claim 4 characterized in that the upper rim and one limb of the auxiliary element have, in a cross-sectional view, the shape of a circle sector

of more than 180°.

6. A raceway as claimed in claim 3 in which the peripheral strip adjoins the sidewall at an acute angle characterized in that the upper rim of one limb of the L-shaped auxiliary element is provided with a tag bent out of its plane.

7. A raceway as claimed in claims 1 and 2 in which the fastening means in the sidewall are formed by one or more continuous holes characterized in that one limb of the L-shaped auxiliary element has a tag to be passed through a continuous hole of the sidewall.

8. A raceway as claimed in anyone of the preceding claims characterized in that one limb has one or more ribs extending parallel to the other limb.

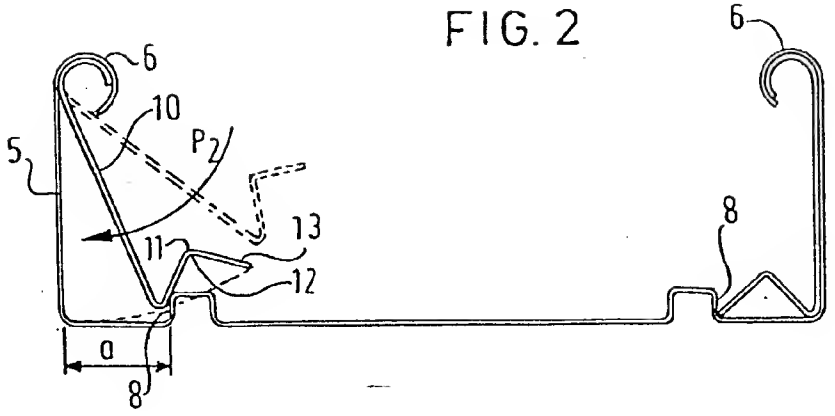
9. A raceway as claimed in anyone of the preceding claims characterized in that the other limb has a kink.

10. A raceway as claimed in anyone of the preceding claims characterized in that the stop member is constructed in the form of a continuous ridge bent out of the bottom surface.

11. An auxiliary element suitable for use in a raceway as claimed in anyone of the preceding claims.

12. A gutter-shaped element suitable for use in a raceway as claimed in anyone of the preceding claims.

FIG. 2



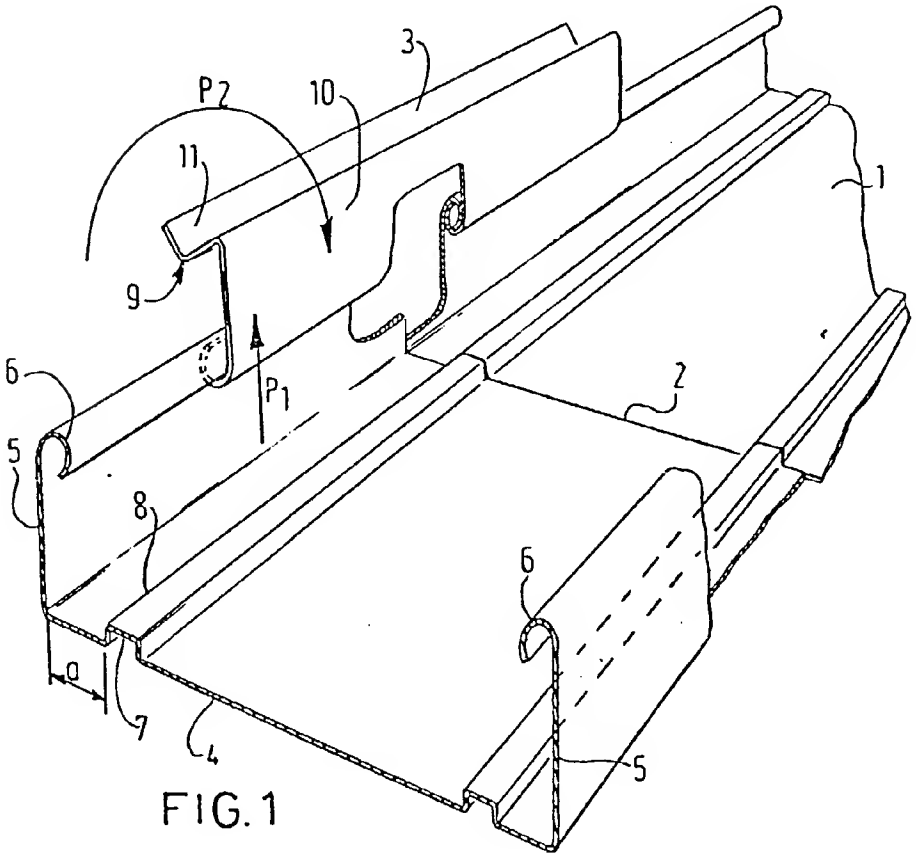


FIG. 1

FIG.7

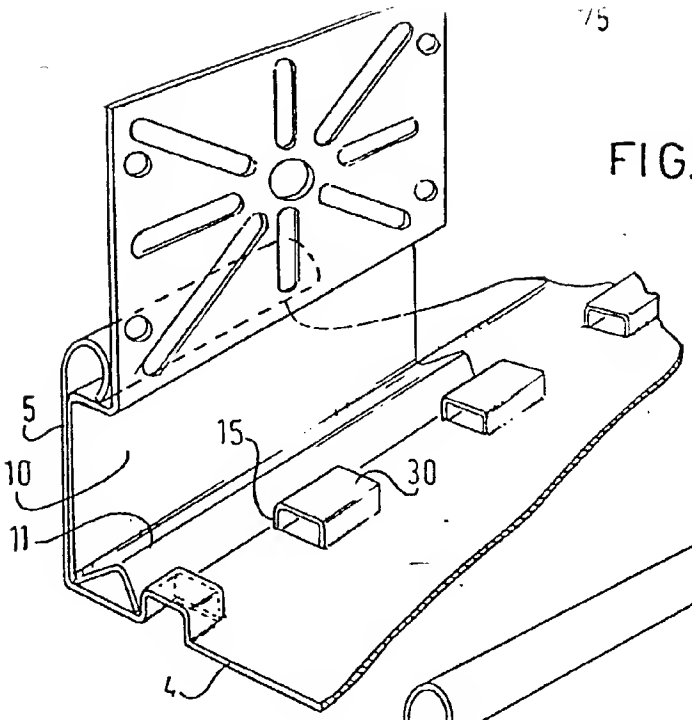
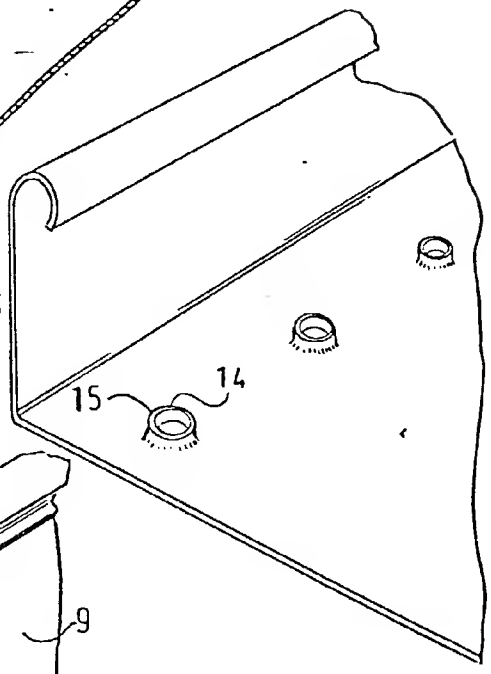


FIG.3



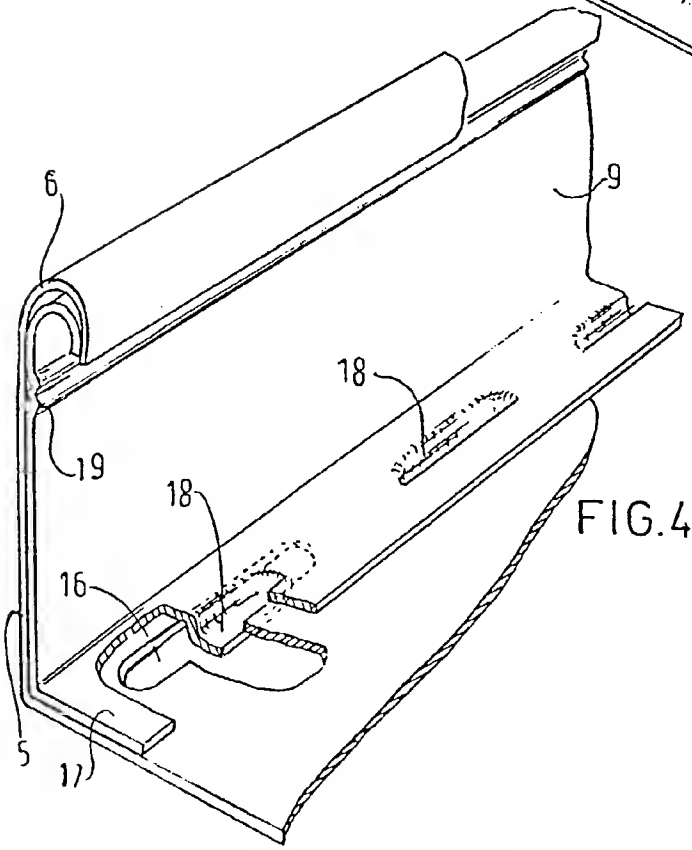


FIG.4

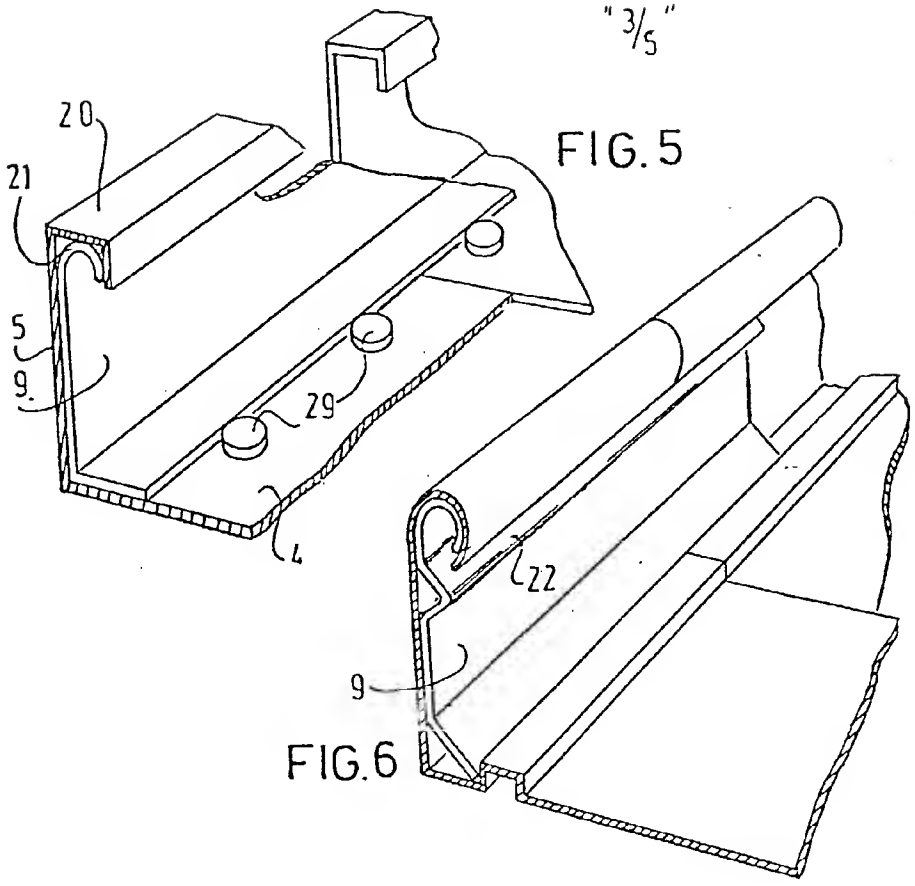


FIG.5

FIG.6

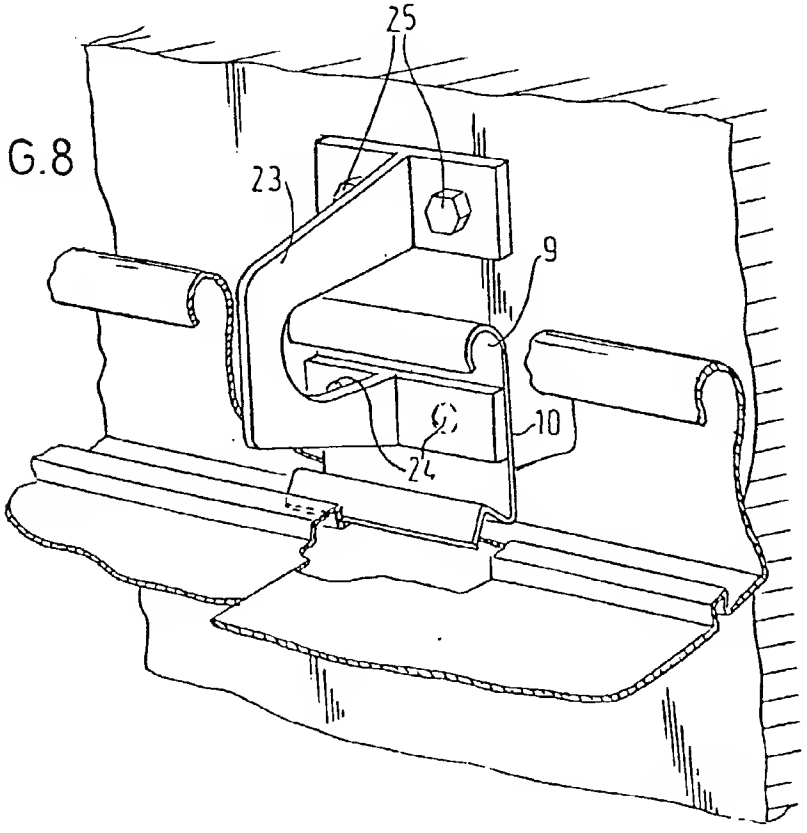


FIG.8

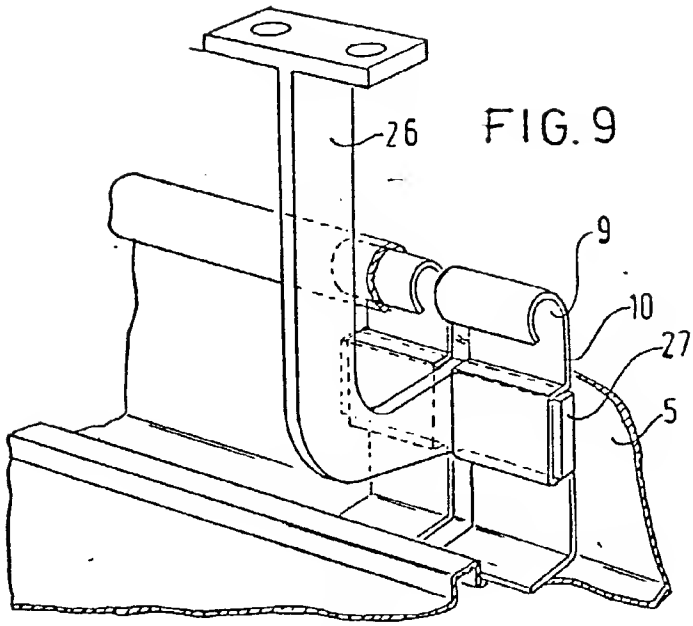


FIG. 9

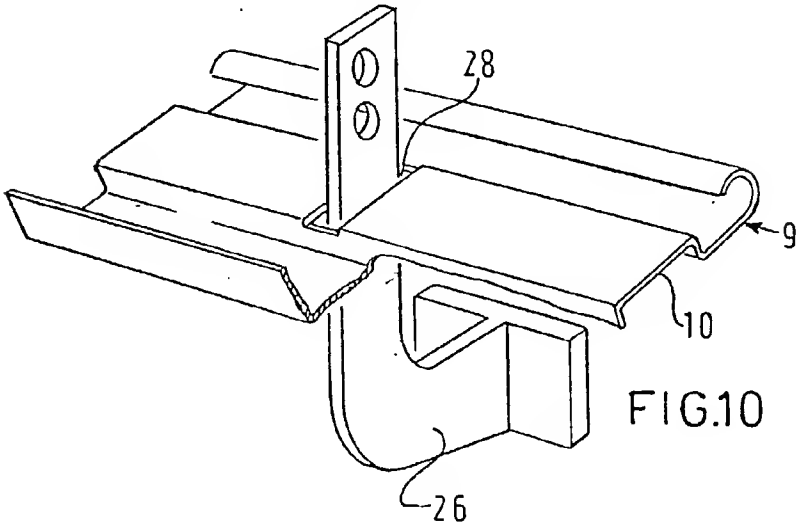


FIG.10

FIG.11

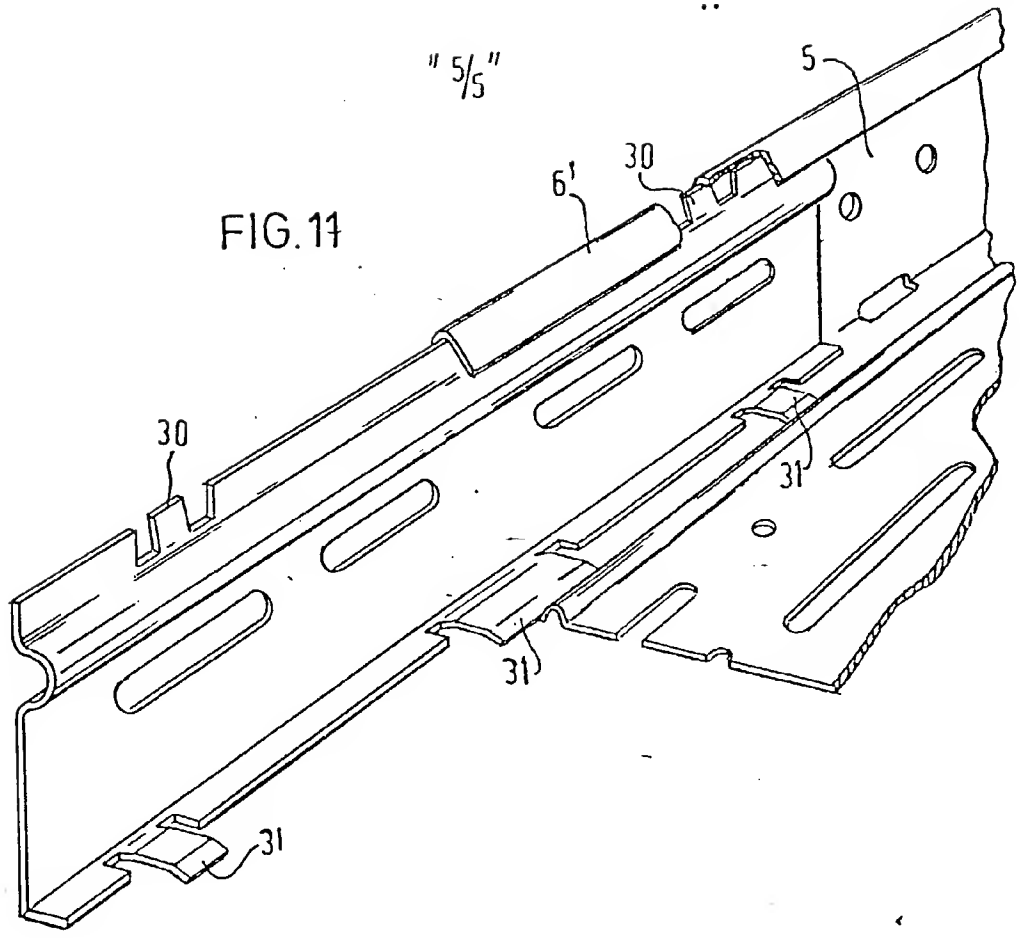
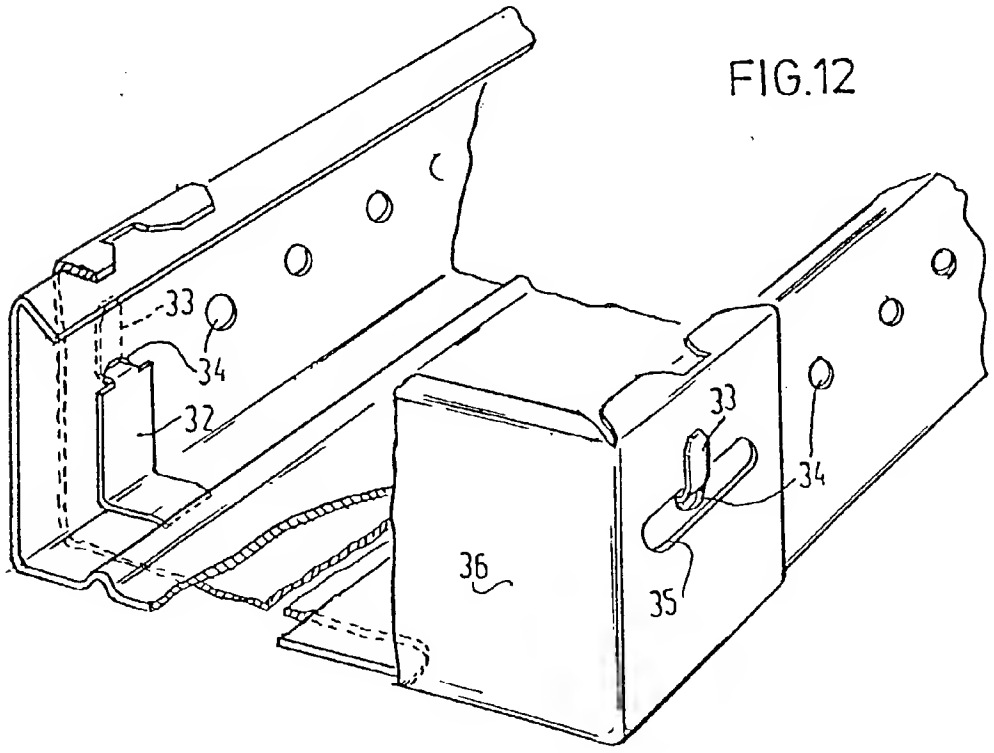


FIG.12



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EUROPEAN SEARCH REPORT

Application number

EP 82 20 1249

DOCUMENTS CONSIDERED TO BE RELEVANT

Catagory	Citation of document with indication, whara appropriate, of ralevant passagas	Ralavant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
			H 02 G 3/06
Y	US-A-4 114 247 (TOTI) * Column 4, lines 53-68; column 5, lines 1-41; figure 3 *	1-4,9-12	
Y	US-A-3 329 763 (D'ESOPO) * Column 1, lines 35-38; column 2, lines 45-61; column 3, lines 19-23; figures 1,2 *	1-4,11,12	
A	NL-A-7 412 503 (KEMPENLAND) * Page 2, lines 9-33; figures 1,2,5 *	1,4,6,7,11,12	
A	NL-A-7 808 478 (VAN GEEL) * Page 4, lines 1-9; figure 1 *	1,6,7,11,12	TECHNICAL FIELDS SEARCHED (Int. Cl ³) H 02 G 3/00 F 16 L 3/00 F 16 B 5/00
E	DE-A-3 139 287 (STAGO) * Page 4, line 5 - page 5, line 7; figures 1-3 *	1-4,6-9,11,12	

The present search report has been drawn up for all claims

Place of search	Data of completion of the search	Examiner
THE HAGUE	22-04-1983	TIELEMANS H.L.A.

CATEGORY OF CITED DOCUMENTS

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